BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 33-132
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Communications and Information

ARMAMENT DELIVERY RECORDING PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

This instruction implements Air Force Policy Directive (AFPD) 33-1, *Command, Control, Communications, and Computer (C4) Systems*. It defines the Air Force's Armament Delivery Recording (ADR) program, whose primary purpose is to provide the combat air forces, unified commanders, and the National Command Authority with a visual record of aircraft weapons delivery, targeting, and accuracy. This instruction applies to commands whose flying units have designed operational capability (DOC) taskings for combat missions and whose aircraft generate visual imagery of weapons delivery. It also applies to supporting commands that process this imagery. This instruction does not apply to maintenance and management of onboard cockpit sensor, video camera, or recording systems. Address technical questions on this instruction to Headquarters, United States Air Force, Visual Information/Publishing Division (HQ USAF/SCMV), 1250 Air Force Pentagon, Washington DC 20330-1250. Refer suggested changes and conflicts between this and other publications on AF Form 847, **Recommendation for Change of Publication**, to HQ Air Force Communications Agency, Doctrine, Policy, and Procedures Branch (HQ AFCA/XPPD), 203 W. Losey Street, Room 1065, Scott AFB IL 62225-5224. Major Commands (MAJCOM), field operating agencies, and direct reporting units send one copy of their supplement to HQ AFCA/XPPD

1. Purpose of Armament Delivery Recording Program.

1.1. Wartime and Contingency Operations. The primary purpose of the ADR program is to rapidly identify, process, and move significant ADR imagery to the Joint force air component commander (JFACC), the Pentagon, and other areas where battle damage assessment and other analysis must be done. Theater and national-level interest in ADR imagery occur primarily after combat operations begin.

1.1.1. National-level Exploitation. Imagery is used to provide immediate documentary evidence of air component actions and disprove enemy claims of civilian targeting and collateral damage. Once imagery arrives at the Pentagon, it is provided to the National Command Authority, intelligence analysts, public affairs offices, and coalition representatives, as appropriate. Requirements for national-level ADR imagery generally are not planned or identified before targets are attacked.

1.1.2. Theater-level Wartime and Contingency Operations. ADR imagery provides rapid battle-damage assessment imagery that air campaign planners use to make retargeting decisions. It is also used to analyze tactics to prevent losses to the enemy. Theater commanders use ADR imagery to support presentations to coalition and United States leaders, congressional delegations, and the public.

1.2. Peacetime Training Operations. The peacetime ADR program is normally only active at wing level and below. ADR imagery is used for local evaluation of flying training and post-mission review. In peacetime, flying and support units also practice their wartime procedures in readiness evaluations and exercises.

1.3. The Deployed Wing ADR Program. This program provides procedural information to operate deployed wing-level ADR workcenters, whose primary purpose is to provide the combat air forces, unified commanders, and the National Command Authority with a visual record of aircraft weapons delivery, targeting, and accuracy.

NOTE: Attachment 2 provides information for wing and unit-level personnel who manage and process ADR imagery.

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2. Management Responsibilities. HQ USAF/SCMV is the OPR for the overall management of the ADR program and HQ USAF/INXY is OPR for intelligence exploitation of ADR imagery.

2.1. HQ Air Mobility Command, HQ Air Force Reserve, and HQ Air Education and Training Command train and equip combat camera theater ADR teams to process this imagery for the JFACC. The MAJCOMs also electronically transmit the image to the Pentagon and make sure that selected significant imagery is preserved for historical purposes.

2.2. HQ Air Combat Command, Air Force Special Operations Command, United States Air Forces in Europe, and Pacific Air forces train and equip deployable wing ADR teams that deploy with wing operations and intelligence staffs to edit, consolidate, and ship imagery to theater ADR teams.

3. Policy.

3.1. Processing ADR Imagery in Wartime and Contingencies. Units that acquire ADR imagery must be prepared to quickly collect, process, and forward imagery for theater and national-level assessment. MAJCOMs will:

3.1.1. Make sure flying units that generate ADR imagery establish programs to manage significant ADR imagery.

3.1.2. Make sure that operations group commanders appoint an ADR officer to ensure ADR procedures, systems, and training are effective and ready for war.

3.1.3. Make sure flying units have sufficient stocks of videotape to allow 3 days of missions at maximum sortie rates in wartime or contingency operations. This videotape stock will ensure that significant imagery is copied to composite master tapes before the tapes are reused in airborne video tape recorders.

3.1.4. Make sure flying units and their supporting unit type code (UTC) tasked visual information teams have ground support systems and trained personnel to select, copy, and forward imagery quickly to the theater ADR facility. Normally, wing weapons or intelligence staffs select significant imagery, and visual information personnel edit and forward the composite videotapes. Deployed intelligence staffs can forward selected frames electronically through combat information systems workstations.

3.1.5. When possible, remove classified display data at the unit level before forwarding it to the theater ADR facility. This is important especially where classified data is not collateral and exploitation will be restricted due to security classification.

3.2. ADR Mission Information. As a minimum, significant ADR imagery will include a written summary for each entry containing the following information: originating unit, weapons system, target identification, weapons used, date, and time of event. Tapes and packages must be properly marked with security classification, downgrading instructions, and air tasking order (ATO) day.

3.2.1. Shipment of ADR Imagery. Ship significant ADR imagery to the theater ADR facility by the fastest means possible consistent with operational security. If communications and network systems are available, send high-priority target scenes electronically. To send non-priority ADR imagery via deployed networks, coordinate with the base network control center to ensure the network can support the data load.

3.2.2. Theater ADR Facility. If needed for analysis or decision support, the facility will be prepared to ship or transmit video products to the JFACC and deployed joint forces commander simultaneously. The theater ADR team will ensure intelligence staffs have timely access to incoming imagery and products to facilitate battle-damage analysis. The JFACC will provide the theater ADR team with instructions on shipment and release to users outside the operational chain of command.

3.3. Managing ADR Imagery in Peacetime. Peacetime ADR imagery is used primarily for unit training. Even though there is little need for this imagery above wing level in peacetime, MAJCOMs will ensure that wings and units frequently exercise their wartime capability to select, edit, and forward significant ADR imagery to theater users.

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GLOSSARY OF REFERENCES, ABBREVIATIONS, ACRONYMS, AND TERMS

References

AFPD 33-1, *Air Force Command, Control, Communications, and Computer (C4) Systems*
AFI 31-401, *Managing the Information Security Program*

Abbreviations and Acronyms

ADR−Armament Delivery Recording
AOC−Air Operations Center
AFI−Air Force Instruction
ATO−Air Tasking Order
CIS−Combat Information System
JFACC−Joint Force Air Component Commander
LOGDET−Logistics Detail
MAJCOM−Major Command
TBC−Time Base Corrector
UTC−Unit Type Code

Terms

Armament Delivery Recording (ADR)—Motion picture, still photography, and video recordings showing the delivery and impact of ordnance. This differs from reconnaissance imagery in that it records the act of delivery and impact and normally is done by the weapon system delivering the ordnance. Armament delivery recording is used primarily for evaluating strike effectiveness and for combat crew training. It is also one of the principal sources of over-the-target documentation in force employments, and may be used for public affairs purposes. (JP 1-02)
ADR Imagery—Imagery of weapons delivery, normally recorded by video camera systems aboard the aircraft.
ADR Program—Management of ADR imagery from origination to exploitation to archiving.
Composite Videotape—An edited compilation of all missions flown on a given day at an air base. Wing staff normally identifies significant imagery from the mission tapes. Wing visual information editors title and edit these selections onto a single tape for shipment or electronic transmission.
Deployed Wing ADR Team—Team that collects, edits, duplicates, and forwards ADR imagery from flying squadrons at a theater air base. Usually these teams deploy as part of a visual information support center.
Gun Camera Imagery—Common term for ADR imagery.
Joint Force Air Component Commander—The joint force air component commander derives authority from the joint force commander who has the authority to exercise operational control, assign missions, direct coordination among subordinate commanders, redirect and organize forces to ensure unity of effort in the accomplishment of his overall mission. The Joint force commander will normally designate a joint force air component commander. The joint force air component commander's responsibilities will be assigned by the joint force commander (normally those would include, but not limited to, planning, coordination, allocation, and tasking based on the joint force commander's apportionment decision). Using the joint force commander's guidance and authority, and in coordination with other Service component commanders and other assigned or supporting commanders, the joint force air component commander will recommend to the joint force commander apportionment of air sorties to various missions or geographic areas. See also joint force commander. (JP 1-02)
Significant ADR Imagery—Imagery showing operational engagements with targets, missile shots, battle damage, and other high-interest scenes. ADR can be significant even if visual imagery does not show engagements, but the audio track documents the event. Training engagements are not considered significant imagery for archival purposes, but may be significant for purposes of exercising the unit-level ADR processing system.

Theater ADR Combat Camera Team--Central processing team for gun camera imagery from theater air bases. The theater ADR facility is normally deployable via airlift, staffed by combat camera personnel, and collocated with the JFACC and air operations center to provide tacticians and analysts access to all mission videotapes

DEPLOYED WING ARMAMENT DELIVERY RECORDING PROGRAM

A2.1. Purpose of ADR. The deployed wing ADR team provides products that directly support the air campaign. The majority of the team's products flow to an air component headquarters who will use them to plan future attacks. The end products include real-time bomb damage assessment reports, briefings for civilian and military leaders, video reports for staff agencies, public affairs products, and training clips. During Operation DESERT STORM this resource allowed campaign planners and intelligence targeting staffs to quickly evaluate the effectiveness of aerial bombardment and reallocate aircraft packages to new targets. This support of air operations is the primary mission of the ADR teams.

NOTE: This attachment should be used as a guide to develop and formalize procedures for managing, handling, and forwarding ADR material. Compliance with this attachment is not mandatory

A2.2. ADR Still-Frame Products. Many deployed wing intelligence staffs have the capability to frame-grab selected scenes from ADR videotapes and transmit them to the JFACC. This process provides immediate imagery for analysis, but it is not capable of sending motion video. Further analysis of battle damage and tactics, as well as many briefings to senior leaders and public affairs products for release, use motion video provided by ADR personnel.

A2.3. ADR Video Products. Because the final ADR products have multiple uses above wing level in wartime and contingency operations, so it is important that local flying commanders understand the wing ADR mission. Command cooperation and support will make the job easier and allow the ADR tapes to be turned around as quickly as possible. Local tapes will eventually be edited into various clips for operations and intelligence reports by the headquarters or theater-level ADR team. The following videotapes are normally produced in a combat situation:

A2.3.1. Wing Composite ADR Tape. This is a compilation of all missions flown at one location, accompanied by listings of target names and other information. It is the single, most important tape produced in the theater. When tapes arrive at the theater Air Campaign Plans Office, planners review them and make edited clips. The composite tape is usually classified SECRET, but depends on the weapons system.

A2.3.2. Daily Theater ADR Tape. The theater ADR team produces this tape when the composite tapes arrive at theater headquarters. The theater ADR tape provides a daily highlight account of all flying operations throughout the theater. This tape often has special effects with enhanced, slow motion video. It is usually unclassified and marked For Official Use Only. The report includes information crucial to identification of the target (target name, mission number, aircraft, weapon, and date). The tape is used to brief the JFACC, commander-in-chief, and Joint Chiefs of Staff (via satellite transmission to Washington DC). Portions of this tape are usually released to the media.

A2.3.3. Special Briefing Tapes. Civilian and military leaders require frequent updates on air campaign progress. The briefing tape allows the leadership to judge the effects of campaigns against specific targets or the effectiveness of specific tactics or weapons. Briefing tapes may also be released through public affairs to the civilian media.

A2.3.4. Video Training Clips. Organizations that conduct air operations require video products to aid in evaluating and improving tactics and identifying targets. The ADR team will provide these units videotapes that show target location and, in certain instances, the landmarks that will guide the aircraft to their respective areas.

A2.4. ADR Responsibilities And Procedures.

A.2.4.1. The wing ADR officer is usually assigned to the wing operations group and manages the program that ensures flying squadrons have the capability to produce gun camera video of flying operations. ADR officers normally:

A.2.4.1.1. Ensure that the deployed wing can generate imagery, that the wing ADR team can process it efficiently, and that the imagery gets to the air operations center (AOC) in minimum time.

A2.4.1.2. Ensure that all parts of the ADR program are capable of supporting combat operations. This includes monitoring flying unit-level ADR review systems, tape supplies, and procedures.

A2.4.1.3. Ensure that the ADR team's process for collection, processing and editing of wing videotapes interfaces smoothly with local exploitation and review procedures. Normally, the communications squadron commander is charged with ensuring the deployed wing ADR processing team is trained and equipped, but the wing ADR officer and wing intelligence analysts must exercise with them to ensure the operation is seamless and effective.

A2.5. Assignment of the Deployed Wing ADR Team. This team is normally assigned to the wing communications squadron. The team provides cataloging, editing, duplication, and distribution of ADR videotapes to the AOC or JFACC supporting a unified command. The team processes imagery in 3/4-inch U-Matic, 8mm, or Hi-8 format depending on the supported weapons system. The team is capable of supporting selected imagery from multiple squadrons at one location, flying

at surge sortie rates. The air campaign planner/director's staff uses ADR to assess the effectiveness of strike missions and to provide higher headquarters with visual recaps of the day's missions.

A2.5.1. Deployed Wing ADR Team Responsibilities. The primary mission of the deployed wing ADR team member is to acquire the ADR videotape from the flying unit, assemble tapes of all missions onto a single videotape each day, and send the edited composite tape to the theater ADR team as quickly as possible. Secondary duties include coordinating with the flying units for area access and tape pickup and performing operator maintenance on editing equipment. Though the equipment is basic and wiring is straightforward, ADR technicians should know their systems thoroughly. The ADR team needs to be familiar with the operation of each piece of equipment and how it all works together. They must be able to perform simple cable connections to get the system operational, be able to clean the heads on the recorders, and perform basic troubleshooting on the equipment. The ADR team also needs to know security markings, packaging, and safeguarding procedures, since the ADR material will probably be classified

A2.5.2. Procedures for Operating the Deployed Wing ADR Workcenter. Try to set up the ADR operation as close to the flying operations as possible, preferably in a wing operations center or other facility where equipment, videotapes, and viewing areas are secure. Contact each operational squadron's weapons officer as soon as possible to arrange for picking up the ADR tapes when pilots are finished debriefing their mission. The ADR technician should dub the tapes quickly, with the highest quality, and return the originals to the flying unit for reuse. They will have to maintain constant contact with the flying units to keep abreast of the flying schedules, which could change daily.

A2.5.3. Place particular training emphasis on the correct completion of the ADR field caption sheet. The caption sheet is vitally important because the theater ADR team will not have access to the mission information. The caption sheet information will vary depending on the type of aircraft/mission being flown; but most need to include the following:

Unit	Aircraft Type
Mission Date	ATO Day
Mission Number	Pilot Call Sign
Target	Weapon Type
Whether Target Was Hit	

A2.5.4. The easiest way to get this information is to print labels for pilots to fill out on their original tapes. Then, ADR technicians can easily transfer this information to the caption sheet while editing. Remember, much of the material received from the squadrons may be classified. Set up procedures to secure the classified tapes when they are not in use. When shipping classified videotapes and captions, follow all special packaging and handling procedures outlined in security regulations.

A2.5.5. When editing, the goal is to dub that portion of the ADR tape where the ordnance is expended or hits the target. Leave approximately 30 seconds head and tail time for each scene. Time code is the preferred tape count. The recorder should be able to record time code; if this is not possible, ensure all reel times (control track) are accurate. Indicate on the captions if the tape time is control track or time code. Normal turnaround time for a composite master tape should be 12 hours; this will ensure the tape reaches the main ADR team before 24 hours has passed. Senior officers are waiting to see this tape; make sure the process is efficient.

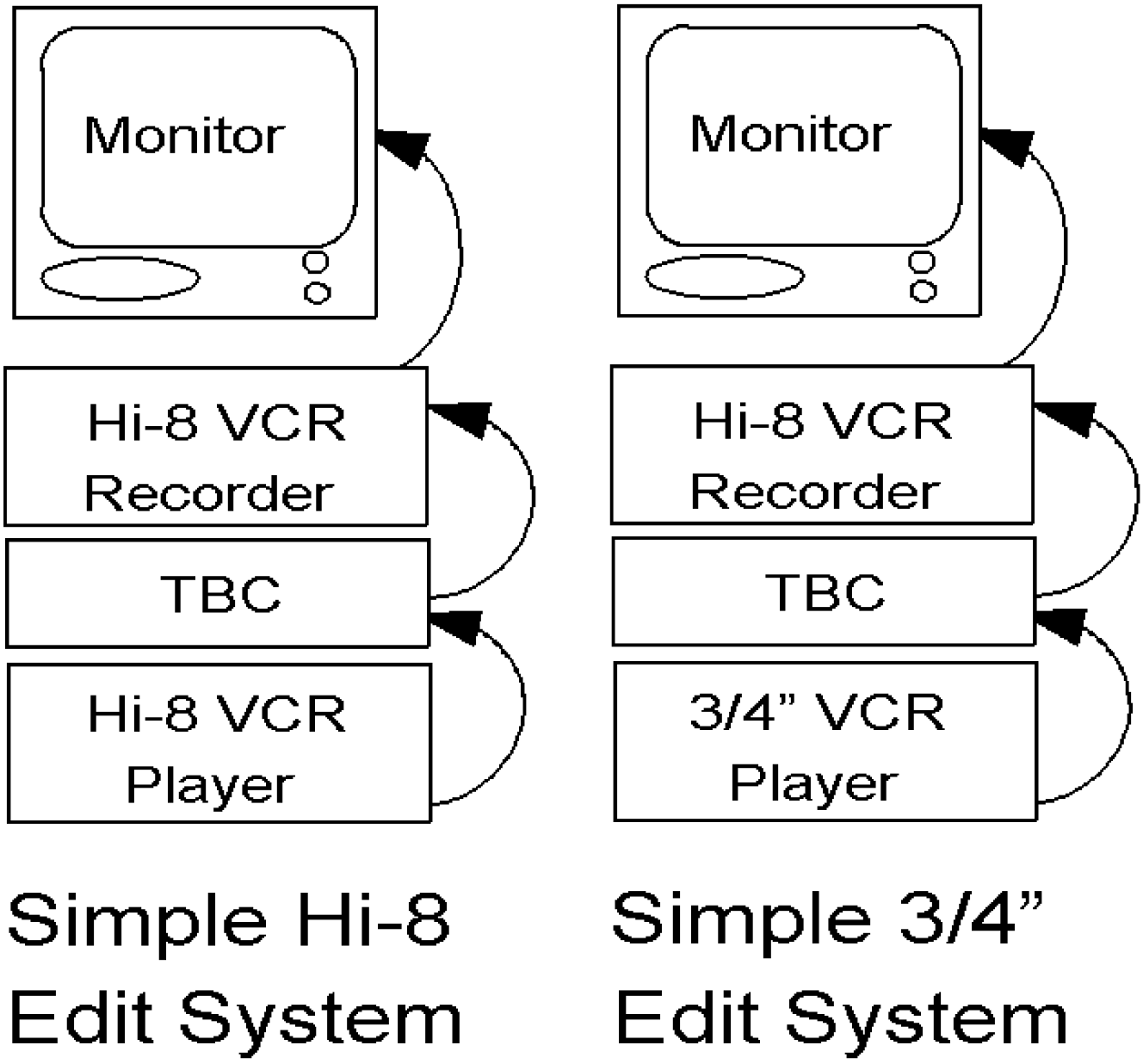
A2.5.6. To ship the edited ADR tape to the theater ADR team, contact the Air Traffic Operations Center. During actual air operations, a scheduled shuttle should be in service. Once this has been coordinated, contact the theater ADR project officer and inform him/her of the delivery service. When sending classified videotapes, include an AF Form 310, **Receipt of Classified Materials**, for security accountability, following the procedures in AFI 31-401, *Managing the Information Security Program*. If you have the capability, send video electronically to the theater ADR team. Because of the high file sizes when using compression technology, minimize the time before and after weapons impact, and send files of the most critical targets first. Be careful not to send too much data that overloads the network and prevents other high-priority users from moving data. Coordinate with the Deployed Base Network Control Center as soon as possible to arrange file transmission.

A2.6. Supplies and Equipment. The logistics detail (LOGDET) for the XFMVS and/or 6KPVS UTC contains the stock numbers and quantities needed for supplies and equipment. The ADR configuration will also apply to the planned consolidated deployable initial communications or communications squadron UTCs. This section provides information on setup, interface, and use of these items.

A2.6.1. Supplies. In the editorial supplies, keep U-Matic 30 minute (mini cassette) videotapes or standard 8mm tapes, depending on the unit's aircraft tape format. While editing, review camera original tapes for dropouts and glitches; replace when needed. If possible re-use the videotapes 10 to 20 times, then hold them in reserve for emergencies.

A2.6.2. Equipment. Team members of the Deployed Wing ADR are the first to handle ADR footage sent from the air wings/groups/squadrons. Therefore, the team needs to have video equipment capable of recording the highest quality image possible. Equipment shown in figure A2.1 should be in very good condition, and the team should bring a spare set of fuses and drive belts for the recorders and players. The following video equipment is designed to meet the mission requirements.

Figure A2.1. Video Equipment Configuration.



A2.6.2.1. Player. The video player should accept the tape format from the supported unit's aircraft. The recommended players for 3/4 inch-equipped systems are listed by stock number in the XFMVS and/or 6KPVS LOGDETs. Older players will also work well if in good condition. Some recorders have a built-in time base corrector (TBC), which improves dub quality.

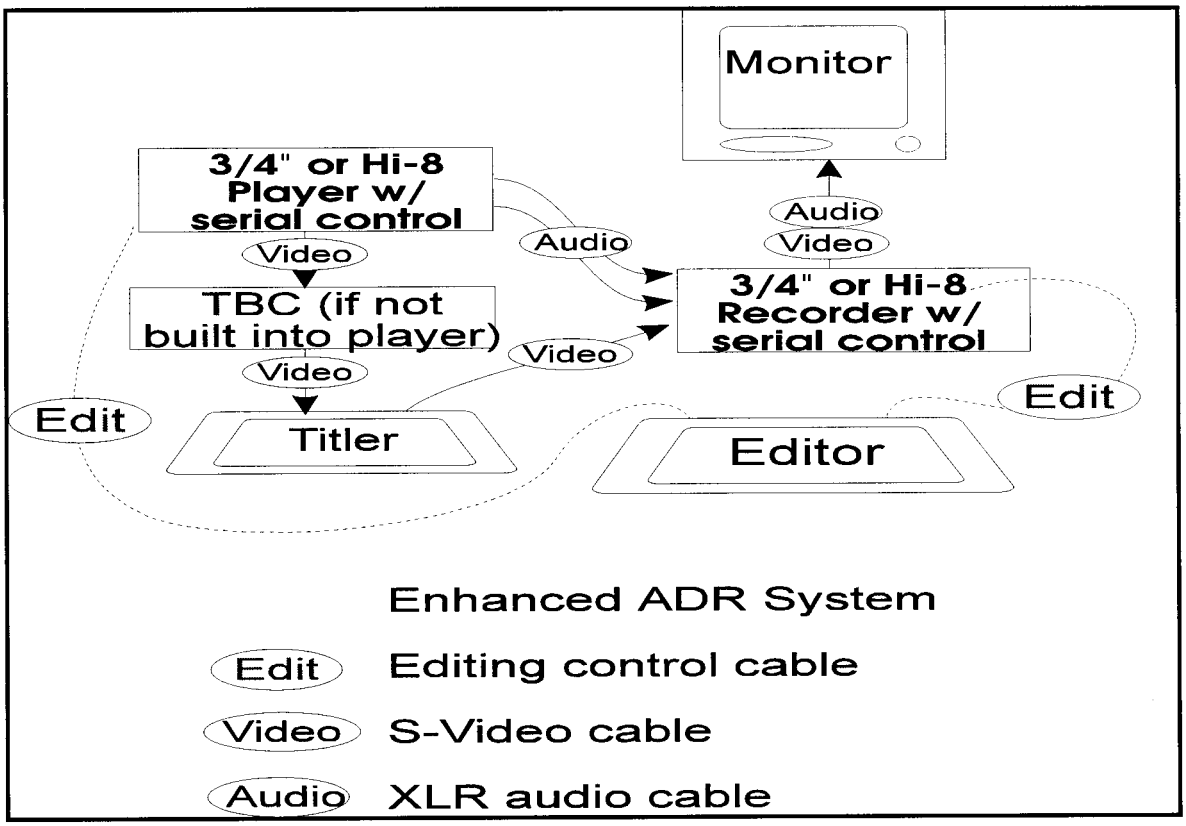
A2.6.2.2. Recorder. The recommended recorder is in the XFMVS and 6KPVS LOGDET. The recorder does not require a TBC. Record to Hi-8 if possible, or the highest quality format available.

A2.6.2.3. Monitor. One high-quality monitor will be required. Two monitors are better and will speed cueing time for aircraft tapes.

A2.6.2.4. TBC. This "black box" processes the video signal to reduce quality loss between dubs. Without a TBC, your picture will lose valuable details. Some recorders, have a built-in TBC that eliminates interface problems. In austere conditions where no TBC is available, connect the player's video output cable directly to the recorder.

A2.6.2.5. Enhancements. An edit controller shown in figure A2.2 can speed up the process. It should be a simple unit since this is a cuts-only system. A portable character generator or "titler" is also valuable; it will help targeting officers and senior leaders quickly understand which targets they are seeing on the tape. For specialized displays where classified visuals must be removed, additional processing equipment may be needed.

Figure A2.2. Enhanced ADR System.



A2.6.2.6. Suitable substitutes may be made for some of the items, but keep in mind the need for a top quality recording capability. (Also, during full-scale combat operations, this equipment will more than likely be used around-the-clock for the ADR mission, so plans to share equipment with the flying squadrons may prove unsuccessful.)

A2.7. Setup. The setup of the equipment is straightforward; the editor will control the 3/4 inch machines with serial logic circuits and Hi-8 serial models on the player side. On the recorder side, use a Hi-8 video recorder/player or a high quality U-Matic recorder with RS-422 circuit card for 3/4-inch editing. Once the equipment is connected, check the system for functionality. *NOTE*: The "enhanced" equipment list is for teams supporting aircraft with 8mm format ADR cameras/recorders. If the flying wing your team is tasked to support is converting to Hi-8mm ADR cameras/recorders, you will need to use a 3/4-inch U-Matic player.

A2.8. Shipment. Ideally, mount ADR recorders in a rack-mount style case. This will protect them during shipment and use. If standard nesting crates must be used, pack the machines well. Get a good case for the video monitors, since they are prone to damage during shipment. Until good packing cases are available for the equipment, retain the original boxes. Put them into nesting crates and use as temporary shipping containers.

A2.9. ADR Team Supplies. Since the base-level ADR function will normally be a one or two person operation per shift, these individuals need to deploy with at least an initial supply of items necessary to maintain the equipment and perform the mission. The following is a recommended list of supplies to keep the team self-sufficient for the first 30 days:
A2.9.1. Cables, video (BNC coaxial or S-VHS if equipped), audio (spare sets are also recommended), and monitor cables for video and audio.
A2.9.2. Electrical extension cords (at least one per piece of equipment).
A2.9.3. Equipment operator manuals (copies for each piece of equipment).
A2.9.4. One hundred videotapes.
A2.9.4.1. Fifty each for aircraft: 3/4-inch U-Matic, UCA 30S mini or standard 8mm 60 minutes.
A2.9.4.2. Fifty each for editor: 3/4-inch U-Matic 60 minutes or Hi-8mm 60 minutes.

A2.9.5. Administrative kit (box or navigator case) which includes:
A2.9.5.1. Tape log book.
A2.9.5.2. General purpose forms (for captioning tapes).
A2.9.5.3. Brown paper/brown envelopes (for shipping tapes)
A2.9.5.4. Packaging tape, brown kraft.
A2.9.5.5. Shipping labels.
A2.9.5.6. Labels for videotapes.
A2.9.5.7. Pens/pencils/markers.
A2.9.5.8. Security ink stamps (confidential, secret).
A2.9.5.9. Document receipt and destruction certificates (AF Forms 310).

A2.10. Tool/Equipment Cleaning Kit. This kit consists of a small, green canvas bag which contains:
A2.10.1. Cotton swabs (with long wooden handle).
A2.10.2. Chamois patches (Approximately 1-inch square).
A2.10.3. *Canned air (usually dichlorodifluoromethane).
A2.10.4. *Alcohol (isopropanol).
A2.10.5. Tools (assorted screwdrivers/pliers/knife).
A2.10.6. Spare cables/connectors (audio and video).
A2.10.7. Spare VCR drive belts and fuses.
A2.10.8. Soldering iron and solder.
A2.10.9. Electrical tape.

NOTE: Asterisked (*) items are considered hazardous cargo and must be properly packed and labeled. If they are available at the deployed location, consider purchasing them there.